

# Discovery Excites Physicists: Forty-Year Search Ends

Four physics researchers, under grants from the National Aeronautics and Space Administration, have discovered a particle that has been described as "the most exciting find in physics in 40 years." The researchers have "very compelling evidence" of the first instance of a magnetic particle. The "magnetic monopole," as it is called, was first theorized 44 years ago to account for a puzzling lack of symmetry in a physical world

theoretically balanced. The find, announced simultaneously in Berkeley, CA, and Houston, has already amazed and excited physics researchers all over the world. "The most exciting discovery in 40 years in physics" is how the find was described by Physics Branch scientists here at Johnson Space Center, where part of the analysis was done. University of Houston researchers W. Zack Osborne and Lawrence

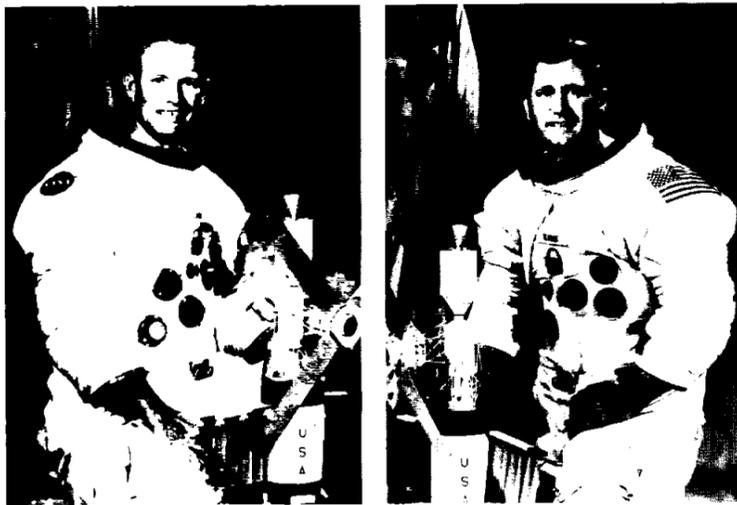
S. Pinsky and UC Berkeley researchers P. Buford Price and Edward K. Shirk discovered the incredible particle after two years of analysis on a set of particle detectors which were flown on a high-altitude balloon experiment. Basically the magnetic monopole is a heavy particle which has a strong, single-poled magnetic field. In normal, everyday physics, magnets have "north" and "south" poles, and the magnetic field flows

between the two poles. Because of the intrinsic relationship between electric field theory and magnetic field theory the absence of a magnetic monopole has, for over 40 years, caused considerable concern among theoretical physicists. The Scottish physicist J. Clerk Maxwell, in 1865, drew up sets of equations which related magnetism with electricity. His formulas have resulted in many of the devices now taken for granted such as electric

motors, communications equipment, measuring devices, and generators. Maxwell, however, could not find an analogue in his magnetic equations for the electron which formed the basis for his electric equations. Sixty-six years later a British physicist, P.A.M. Dirac, postulated that a magnetic monopole would fill the gap and round out the equations which Maxwell began. (Continued on page 2)



Effective November 1, 1975, Major General Thomas P. Stafford will leave his assignment as a NASA astronaut to become commander of the US Air Force Flight Test Center at Edwards Air Force Base, California. Selected as a NASA astronaut in the second group in September 1962, Stafford flew on Gemini 6, commanded both the Gemini 9 and Apollo 10 missions, and was commander of the Apollo crew for the joint US/USSR Apollo-Soyuz Test Project. "The experience gained in Gemini, Apollo and Apollo-Soyuz has a tremendous commonality with test and development of new aircraft," he said. The 45 year-old Oklahoma native has a total of 507 hours and 43 minutes in space and has logged more than 6300 aircraft flying hours.



## Carr and Pogue Retire from Military Service

NASA astronauts, Gerald P. Carr and William R. Pogue, will retire from military service Monday, September 1. Carr, 43, is a Marine Corps colonel with 22 years of military service; he will remain with NASA as a civilian astronaut. Pogue, 45, an Air Force colonel, has 24½ years of military service; he will leave NASA. Both were selected as NASA astronauts in April of 1966. Carr and Pogue, along with Dr.

Edward G. Gibson, comprised the crew for Skylab 4, the longest manned space flight to date. They share the world record for individual time in space of 2017 hours, 15 minutes, 32 seconds. "The achievements of the American space program over the past 17 years have been a great source of pride and satisfaction to me, and I shall always be grateful for the opportunity I had to share in part of that effort," said Pogue. "I am (Continued on page 3)

# ROUNDUP

NASA LYNDON B. JOHNSON SPACE CENTER HOUSTON, TEXAS

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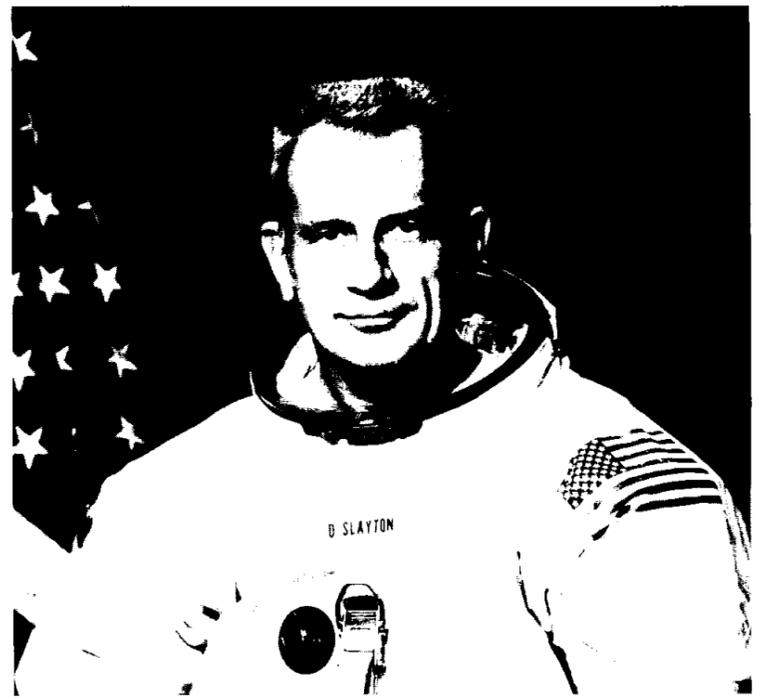
## SURGEONS FIND SLAYTON'S LUNG LESION BENIGN

"No evidence of malignancy" was the welcome finding after Donald K. Slayton's exploratory lung surgery performed Tuesday, August 26, at the M.D. Anderson Hospital in Houston.

A 4-millimeter, pencil-eraser-size nodule had been noted in X-rays of Slayton's left lower lung during recovery from the nitrogen tetroxide exposure in July; however, consensus of all physicians involved was that the gas inhalation had not caused the lesion. Pre-flight X-rays were checked, and evidence of the lesion was first found in the February 1975 annual physical examination film. Further re-evaluation compelled physicians to advise Slayton to undergo surgery.

A pre-surgery examination of the bronchi revealed no abnormal cells. The 2½-hour surgery involved the removal of a triangular-shaped wedge from Slayton's left lung. Examination of the wedge, which included the nodule and a small amount of surrounding normal lung tissue, again revealed no signs of malignancy. Adjacent lymph nodes were biopsied and found normal; there were no signs of any other lesions.

In a news briefing held after noon on Tuesday, Dr. Charles A. Berry - President of the University of Texas Science Center at Houston - disclosed that a chest X-ray examination immediately after



surgery "showed no evidence of the nodule." Berry called Slayton "an extremely lucky man." One reason was that "persons of this age range (Slayton is 51) ... with a history of previous smoking" had 50-50 odds of having malignancy of the lung. Also, Berry said, "This is probably a terrible thing to say, but Slayton was lucky to have had an exposure to nitrogen tetroxide." The careful and intense examinations made of the crew during recovery were what revealed the minute lesion; if not

for these, the lesion "would have not been picked up ..." Slayton will spend 7-10 more days in the hospital, during which his chest will be sore. He is expected to make the tour of the Soviet Union scheduled to start September 22nd. Dr. Berry concluded by saying, "I expect to see him up and about and trying to exercise and move faster than the average patient ... he may be chronologically almost 52, but he certainly isn't that physiologically."

## Le Mort d'un "Mosquito"

The mosquito was first seen at 9:30 the night of July 15, 1975. Deke Slayton mentioned that zero G didn't seem "to disturb the adult female mosquito ... flying about here beautifully." The Apollo crew decided to feed it for a while and then feed it to the fish, or to bring her back to earth alive and do as Vance Brand suggested - "... give her a pair of astronaut wings." What happened to it? It was not seen again. Apparently, in the pure oxygen atmosphere, under reduced pressure, it died and fell into a crack someplace.



# SPELL IT WITH A "J"

"Fjeld, not Field - Foxtrot, Juliet, Echo, Lima, Delta." If not for any reason other than his name, it would be impossible to forget Paul Fjeld. Spelled with a J, but pronounced as a Y, the last name is Norwegian, as is Paul.

An astronomy major at the University of Toronto, Paul is now an official NASA artist. He tends to make one think of those success stories of "Look at Him Now; Here's Where it all Began..."

His interest in the space program started with an 8th grade class assignment which he made PROJECT APOLLO. "It just took my imagination," he said; the project was soon completed, but Paul was just beginning. He was literally "hooked." He started requesting, reading and studying all the space information obtainable to him. The big break came when the Space Pavilion opened in 1970 at the EXPO '67 site in Montreal. Paul visited the Pavilion and was bored with the guides who gave a "recited, very dull, recorded-type spiel." So, he volunteered his time to try to teach the guides interesting and exciting facts that would in turn spark a little enthusiasm in them. He wrote a guide handbook containing simply-stated facts which were "seductive enough to sell the space program to the visitors."

Paul was self-conscious about being the 15 year-old "typical space kid." He had saved enough money doing odd summer jobs to be able to go to Cape Canaveral for the Apollo 15 launch. Press accreditation and all, he was off to the Cape, and a local Montreal newspaper

headlined the story about him with "Paul Blasts Off for Cloud Nine." "The article was everything I was trying to get away from," he recalls.

So from that time on 1971, he became totally involved. Acting as a reporter for the Montreal Star, he went to the Cape for the Apollo 15, 16 and 17 launches. Throughout Apollo 17 he began to draw illustrations to compliment his stories. He "tagged along" with the official NASA artists and was always anxious to go anyplace where he might learn something.

In 1973 when the Skylab solar wing ripped off soon after the first launch, Paul found that he was the only artist who had stayed at the Cape. He undertook the job of painting what the entire configuration looked like. His concept of it became his first NASA release.

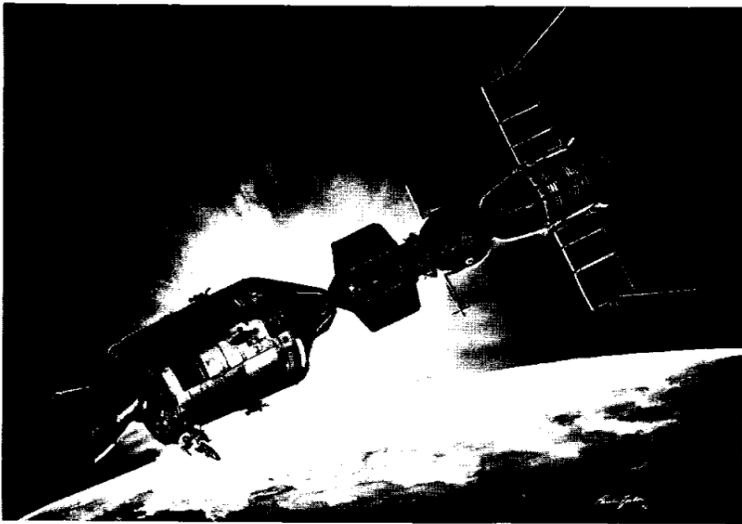
Paul was asked to join the NASA art program as an official artist for the third launch, Skylab II. Conflicts with his school schedule

caused him to have to refuse that offer and also the following one for Skylab III. He never lost touch, though, and with all his information, notes and pictures, completed his Skylab art work.

He did the same during the ASTP mission, but this time concentrated mostly on the proceedings within Mission Control. Already he is using engineering mockups to start his drawings of Shuttle.

Paul left JSC recently so as to begin his newly acquired commission with National Geographic. His ideas for coverage of ASTP will be what he says are "paintings of scenes never done before."

His astronomy major he hopes to use to get into high energy astrophysics, an important part of Shuttle operations. "I guess my secret dream is to fly," he confessed, "but I won't die if it doesn't happen. Painting is my hobby, and I'm never going to stop."



Paul's painting shows excellent detail on the American and Soviet spacecraft.



Harvey L. Hartman, Chief of the Personnel Management Branch, is shown here receiving the 1975 William A. Jump Memorial Award from Dr. Kraft. The annual award is presented in recognition of outstanding service in the field of public administration. Hartman was commended by Dr. James C. Fletcher for improving the quality of the JSC personnel management services and was recently selected for a one-year temporary assignment as Personnel Director at NASA Ames Research Center in Moffett Field, California.

## Combined Federal Campaign Gets Underway

September 3rd will mark the kick-off of the 1975 Combined Federal Campaign (CFC) at JSC and Federal agencies within the Gulf Coast area.

"The goal for JSC this year is \$168,800," said JSC-CFC Chairman Roy Aldridge. The CFC is a one-time co-operative on-the-job campaign that covers solicitation by the United Fund Agencies, the National Health Agencies and the International Service Agencies. "WHERE DOES MY MONEY GO?"

Contributions are divided ac-

ording to carefully prepared agreements among the three agencies; however, any designated gifts will go to the agencies specified. The pledges go to services in a five-county area - Brazoria, Chambers, Fort Bend Galveston Mainland, Harris and Montgomery Counties.

Agency services range from medical care and education for the poor to drug abuse programs, medical research, aid to veterans and servicemen, and recreational facilities.

Doubts of what is really being  
(Continued on page 3)

## Did You Know That...

... the total Apollo mileage was 3,765,264 statute miles or 6,060,027 kilometers?

... the total Soyuz mileage was 2,470,305 statute miles or 3,952,488 kilometers?

... the Apollo Command Module splashed down at the speed of 31 feet per second, or about 22 mph? (The impact of the Soyuz landing was about the same.)

... the ASTP Apollo splashdown was covered live on Soviet TV for the first time? Before, they were covered on a delayed basis with regular news programs.

... the per-mile cost of ASTP was about \$65? Total ASTP cost was \$245 million.

... the time of Tom Stafford's and Alexey Leonov's first handshake was exactly 2:19:27 seconds CDT, Thursday, July 17, 1975?

... the time of the farewell handshake was 3:45 p.m. CDT, Friday July 18, 1975?

... the time spent in the Soyuz by the US crew was Tom Stafford, 7 hrs., 10 min.; Vance Brand, 6 hrs., 30 min.; and Deke Slayton, 1 hr., 35 minutes?

... the first handshake took place 145 st. miles above, and 20 st. miles WNW of Metz, France?

IF YOU DIDN'T, NOW YOU DO!

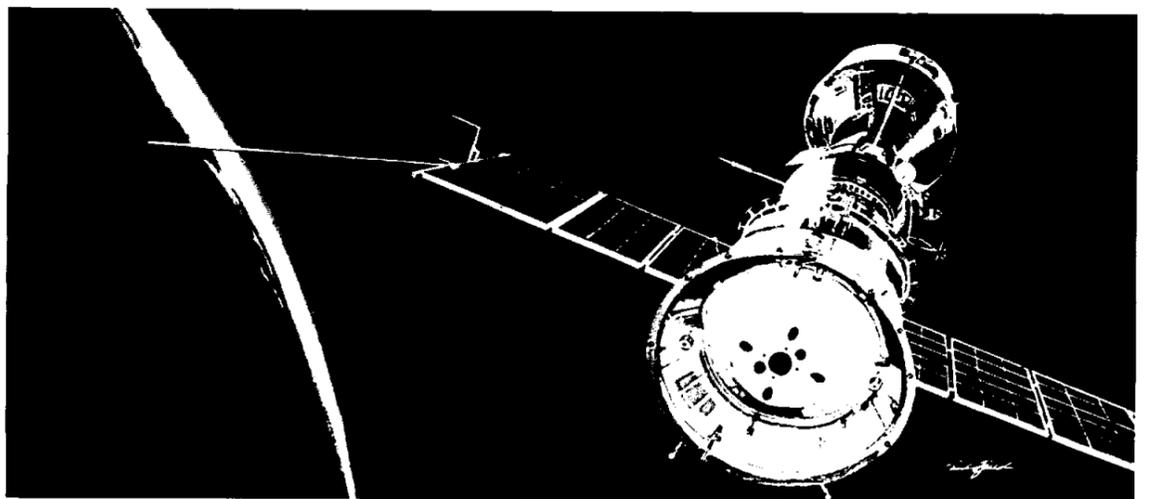
## Discovery...

(Continued from page 1)

Dirac's monopole would have explained some basic phenomena in the world of physics such as the electrical charge of the proton and electron. Dirac's theory was taken very seriously and physicists have been looking for the elusive monopole since 1931.

The balloon experiments which provided the basis for this find were part of a NASA-funded study called "CREPE," or Cosmic Ray Emulsion Plastic Experiment. A total of five balloons were launched from Iowa with CREPE detectors to altitudes of as high as 130,000 feet. The CREPE experiments lasted from 1969 through 1973. The monopole was discovered on the last detector flown. Also, during this same time magnetic monopoles were being sought in samples of the lunar soil being brought back by the Apollo astronauts. The lunar program, however, produced no evidence of a monopole.

Two of the monopole discoverers, Osborne and Pinsky, worked directly for the Johnson Space Center during the lunar missions. The two were involved in the Apollo Light Flash experiments which were designed to shed light on the nature of the high-energy cosmic particles found in space. Price is a well-known physics re-



Another of Paul's paintings here depicts the docked Apollo and Soyuz in Earth orbit. The glow on the Earth's horizon is seen on the left.

searcher among whose credits are the invention of one of the particle detectors flown on the CREPE flights.

The monopole which the Berkeley and Houston physicists have identified was found by using a combination of detectors which included plastic sheets (which were later chemically etched to show traces of the particle's path), fast film detectors, and specially formulated emulsion layers which would show the path of any cosmic or monopole particle passing through.

The monopole was discovered by an elaborate process of scientific elimination and was described as having a mass (or atomic weight) 200 times that of a proton with an equivalent magnetic charge 137

times the electric charge of an electron. The monopole was traveling at one-half the speed of light and heading down, or towards, the Earth.

powerful than the most powerful present-day accelerators.

Should other particles be found, what does it tell us about the production mechanism of similar monopoles? How this one was formed and what natural laws of physics were brought into play are questions now confronting the discoverers.

One of the theoretical problems of this discovery, according to Craddock, is whether the monopole's find is a fluke of physics. There are presently no theories to accommodate the production of

monopoles. Although their existence was postulated, the amount of energy required to produce one of these particles on Earth is many times that available in today's particle accelerators. According to Osborne, "a tremendous amount of energy was concentrated in a very small place to produce the one detected" on the CREPE experiment.

As excited as the discoverers are, the world scientific community is even more interested. At a two-week symposium on cosmic ray physics in Munich, Germany, which began August 18, one whole day has been set aside based on the recent find so the physicists can once again tackle the elusive monopole.

# JSC Wins in Federal Savings Bonds Campaign

Total NASA-wide figures for all installations were 1,137 new buyers and 1,033 increased bond purchases. The new and increased deductions will result in an annual increase in savings of more than \$784,000; total NASA yearly savings for bonds will exceed \$14,600,000.

The four other installations that qualified for awards are NASA Pasadena Office with 100 percent participation; National Space Technology Laboratories with 92.6 percent; Kennedy Space Center with 90 percent; and Langley Research Center with 89.6 percent participation.

It is anticipated that a rate of 80 percent or higher will be maintained in future Savings Bonds Campaigns.

JSC was one of five NASA installations to receive an award for exceeding the 80 percent goal of total employee participation for the 1975 Federal Savings Bonds Campaign.

The NASA-wide goals set for the campaign were to increase employee participation to at least 80 percent and to persuade as many buyers as possible to increase their payroll allotments.

JSC's final results were 105 new buyers and 155 bond increases, that making a 2.8 percent participation increase and a 5.3 percent rise of buyers' increases. That brought final figures to 3,039 bond buyers out of the 3,729 JSC employees, or 81.5 percent participation. For this, JSC earned a 5' x 8' Minuteman Flag Award.



## FEDERAL CAMPAIGN

(Continued from page 2)

done with the money can be answered by visiting one of the many facilities. One, for example, is the Harris County Center for Retarded; their present enrollment is 350 students. The services provided include everything from counseling to vocational training to health services. For example, dental care at a low expense can be obtained by the mentally retarded; those needing the dental services don't necessarily have to be enrolled at the Center. They serve as many as possible of the approximate 45,000 retarded persons in Harris County. "WHY SHOULD I?"

But that is only one of the many agencies — the YMCA, YWCA, the Muscular Dystrophy Association, CARE, March of Dimes, and dozens of other agencies are serviced ALL IN ONE CAMPAIGN!

No one is forced to give, but it's an opportunity to contribute to the welfare of our fellowman. Let's support the campaign on a worthwhile basis. "Thanks to you ... it works ... for all of us."



Shown holding JSC's new Minuteman Flag Award are, from left to right: Roy Aldridge; Harry Dedeaux; Sig Sjoberg; David Henrich, Acting Area Manager of Savings Bond Division; and William Carpenter, senior Vice-president of Tennico. The Minuteman Flag will be flying on the flagpole in front of Bldg. 1 today.

## EAA Attractions

### TICKET CORNER

Available in Building 11 Exchange Store, X4814, 10:00 a.m. to 2:00 p.m. NO REFUNDS.

**SPORTS** — Houston Astros Baseball, \$3.15 Reserve and \$4.00 Box (regular \$3.50 and \$4.50). Remember September is the last month for baseball ...

**SPECIAL PLACES OF INTEREST** — Sea Arama, Adults \$3.25, Children \$2.25 (regular \$4.25 and \$3.25); Disney Magic Kingdom Cards, FREE! Good at Disneyland and Disneyworld for special price ticket books and a 10% discount at most Howard Johnson's; Lion Country Safari Cards — FREE; Six Flags Funseekers Club cards, FREE, entitles card holder and family to \$1.00 savings on each ticket purchased at Astroworld and Six Flags Over Texas, plus a 10% discount at 80 major hotels in the area, and more ... ABC Interstate Theatre, \$1.50. **DINNER THEATRES** — Windmill Dinner Theatre — \$14.00 Couple (Regular \$20.00). Started August 18, James Drury in "Catch Me If You Can". Tickets on sale. Dean Goss Dinner Theatre — \$16.00 Couple (Regular \$20.00). Comedy by Carl Reiner, "Something Different" thru September 7.

### CPR COURSE

A cardiopulmonary resuscitation (CPR) course is scheduled for September 16 and 18 at the Gilruth Recreation Center. This free course is designed to provide the layman with knowledge and techniques necessary to sustain the life of a person suffering a heart attack. The class will meet each night from 7 to 10 p.m. and will be limited to the

first 30 people who apply. To register and for further information, call X4921.

### ICE CAPADES COUPONS

Discount coupons for Ice Capades performances are now available for \$1 savings on adult & youth tickets. Coupons are for the following performances: Sept. 4, 8 p.m.; Sept. 6, 2 p.m.; Sept. 7, 6 p.m.; Sept. 8, 8 p.m.; and Sept. 9, 8 p.m. Prices for adults: \$4.50-\$4-\$3-\$2. Prices for youths (16 and under): \$3.50-\$3-\$2-\$1. Mail the coupon today or present it in person at the Sam Houston Coliseum Box Office (open 10-6). (See below.)

### TENNIS LESSONS

Beginner and intermediate tennis lessons will start at the JSC Courts September 22. The adult lessons will consist of one hour sessions twice per week for four weeks. Children's lessons will consist of one hour sessions once per week. Adult lessons will be \$30.00 and children's lessons \$15.00. Morning and evening hours are available. A playground is located next to the courts for those who have children. Deadline for entry is September 17. Call X3594 for more information.

### BRIDGE LESSONS

Learn the fundamentals of bidding and playing from Bill DeGeorge, a licensed teacher and game director in this area since 1969. Beginner and novice bridge lessons are now being formed at the Gilruth Recreation Center. The novice class will meet from 6:45 to 9:45 p.m. each Monday beginning September 29 for 6 weeks. The beginner's class will meet from 7:30 to 9:30 p.m. each Thursday beginning October 2 for 6 weeks. The fee is \$15.00 a person for each class. To register and for further information call X4921.

### BATON TWIRLING

Take this opportunity for your daughter to learn baton twirling from Becky Bourland, the Texas State Champion in 1973. Classes will begin at the Gilruth Recreation Center Saturday, October 4 at 9:00 a.m. The fee is \$8.00 per month. To register and for further information call X4921.

### WANTED: PEOPLE TO ATTEND

**THE JSC/EAA ANNUAL PICNIC**  
September 27, 1975  
**ADVANCE TICKETS:**  
Adults, \$3; Children, \$2

Mail to: ICE CAPADES, Sam Houston Coliseum, 810 Bagby St., Houston, TX 77002 NASA-Johnson Space Center

Enclosed is Check or Money Order, payable to ICE CAPADES, in amount of \$ \_\_\_\_\_ for \_\_\_\_\_ Adult tickets @ \$ \_\_\_\_\_ each and \_\_\_\_\_ youth tickets @ \$ \_\_\_\_\_ each.

**PERFORMANCE:**  
First Choice: Day \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_  
Second Choice: Day \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_

Name \_\_\_\_\_ Day Phone \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

PLEASE ENCLOSE SELF-ADDRESSED, STAMPED ENVELOPE FOR FAST, ACCURATE RETURN OF TICKETS!

# Quoting in Space

Here are fragments from the ASTP Mission Commentary that may have slipped by our attention. Some are worthy of a smile, others of a moment's thought, and others are just worthy.

7/17/75 — 2:29 p.m. CDT

SLAYTON — ... Yes, I have a lot of advice for young people but I guess probably one of the most important bits is to, number one, decide what you really want to do and then secondly, never give up until you've done it.

7/18/75 — 6:49 a.m. CDT

STAFFORD — Here we have a small kitchen aboard ... There is very little room here but, after all, nobody has to do any dishes.

7/18/75 — 8:54 a.m. CDT

PAO COMMENTATOR — ... In one of the back rooms here in Mission Control Center, there are three air-to-ground interpreters working 3 shifts to interpret voice-over on the Soyuz communication loop. And attached to the top of their console is a handwritten sign which says "Happiness is LOS."

7/18/75 — 12:23 p.m. CDT

STAFFORD — ... Yesterday, when I first opened the hatch and said hello to Valeriy and Alexey, I had a couple of thoughts ... The thoughts were that when we opened this hatch in space, we were opening back on the Earth a new era in the history of man ...

7/18/75 — 12:42 p.m. CDT

LEONOV — ... But once again, I'd like to say that space food is not the same food which is eaten by people on earth, no. But as an old philosopher says, "The best part of a good dinner is not what you eat but with whom you eat." Today I have dinner together with my very good friends Tom Stafford and Deke Slayton ... it was best part of my dinner.

7/19/75 — 4:33 a.m. CDT

HOUSTON — ... We got a news item here from Moscow. And excuse my trying to pronounce the Russian names but it's a gentleman by the name of Bazemacan Satelebev (?), I guess, has named the — his twins Apollo and Soyuz according to the TASS news agency ... Even in London you're making news. The head barman in a London hotel announced a new cocktail in honor of the Apollo Soyuz Space Flight. The barman, Joe Gilmore, said the new drink called "Link-up" is made of equal parts of Southern Comfort, Russian Vodka, with a teaspoon of fresh lime shaken up well with ice. —

7/20/75 — 12:32 p.m. CDT

PAO COMMENTATOR — ... In all of the history of space flight there've been a great many firsts. Sputnik I was the first satellite. Yuri Gagarin, aboard Vostok I, was the first man in space. Alan Shepard, the first American in space. Alexey Leonov was the first man to take a spacewalk. Valentina Tereshkova was the first woman in space. Neil Armstrong, the first man to step on the Moon. And there've been some firsts on this Apollo-Soyuz mission — the first joint flight with docking and crew transfer of spacecraft between two nations. There've also been a great many lasts in Apollo-Soyuz — the last flight of the Apollo-type spacecraft. It will be the last water landing of a U.S. spacecraft. It will be the last use of parachutes for U.S. manned spacecraft landing. And the launch on the 15th was the last flight by any of the Saturn family of launch vehicles ...

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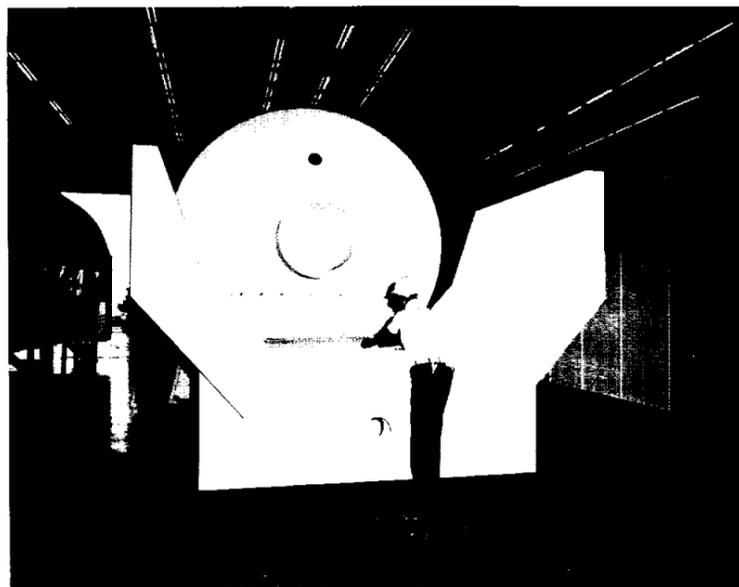
## Pogue and Carr (Continued from page 1)

retiring to accept a position as vice president with the High Flight Foundation of Colorado Springs." High Flight is an evangelistic organization founded by James B. Irwin, who retired as an astronaut in 1972.

Pogue and his wife and three children will continue to reside in the Clear Lake area. His resignation will reduce the number of NASA astronauts to 31.

With Carr as commander, Pogue

as pilot and Gibson as science pilot, the Skylab 4 mission was launched November 16, 1973 and concluded February 8, 1974. During 1214 revolutions of the earth, the crew successfully completed 56 experiments, 26 science demonstrations and 13 student investigations. They also acquired extensive earth resources observations data using hand-held cameras and Skylab's earth resources experiment package camera and sensor array.



Not a work of modern art, but the pallet section of the Spacelab engineering mockup ... Located at the Marshall Space Flight Center in Huntsville, Alabama, the mockup is the only such unit available in the United States; it represents the Spacelab being built in Europe under direction of the European Space Agency (ESA) as a payload for the Space Shuttle. The Marshall Center serves as lead NASA center for Spacelab development. Instruments which must be exposed to space, such as telescopes, sensors, detectors and antennas, are to be carried on the pallet section.

# DEVELOPING HISTORY FOR THE WORLD

If a picture paints one thousand words, then much has been said in the last 13 years through NASA photographs. Unfortunately, little has been said about the people who provide the world with the photographs.

The still photographs and motion picture films that document the space program, "from Grissom and Young's Gemini III pictures through ASTP," have been processed here at JSC in the Photographic Technology Laboratory. The work that has been done there by the many civil service and contractor employees is astounding.

Presently being worked on is all the onboard photography from the ASTP mission that will be sent to Moscow in accordance with a previous joint US/USSR photographic plan and agreement. The reciprocal exchange will be made within the next two weeks and includes in the still photography

category, transparencies, color internegatives, and color prints; and in the motion picture category, 35mm internegatives and positive material. (These have been specially made from 16mm film rolls, due to the difference in US and USSR film size.) The number is incredible for the short amount of time taken for processing — 53 rolls of onboard film, or 3,080 feet of 16mm film, 540 frames of 35mm film, and about 3,740 frames of 70mm film. A package containing a similar amount of film documenting much the same subjects is expected from the Soviet onboard photography.

Thanks to this efficiency, a very special feature was made possible at the Grand Central Terminal in New York City. Occupying the East Balcony above the Grand Concourse at Grand Central, the Eastman Kodak Company has an 18 x 60-foot Colorama. In the last 25 years, 410 productions have been displayed on it. As of August 4, a

series of six photographs of the Apollo-Soyuz mission have been on display. The production starts with liftoff on the left (see picture) and ends with recovery. The production program done by Kodak involved a great amount of work, as the six negatives had to be enlarged to working size for the enormous Colorama; one-half-inch sections of each of the six negatives were enlarged to a width of three feet. Twenty-five such strips were required, fifteen measuring the 18-ft height and ten measuring nine feet in height.

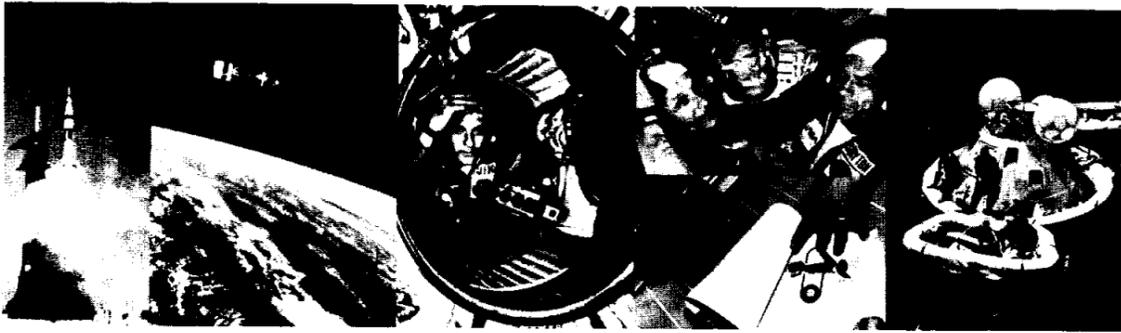
A Kodak employee, Walt Latoski, was able to look at each roll of film as soon as NASA had approved the release. He made his selection and obtained negatives and internegatives from the laboratory. He said of the assistance he received from the JSC laboratory: "They were really tremendous with all they did for us and with their understanding of the rush nature of

the project. I am particularly thankful to John Brinkmann and to John Holland ..." Brinkmann is Photographic Technology Division Chief, and Holland is Chief of the Technical Laboratory Branch.

The Colorama, which is seen by about 250,000 commuters and

visitors daily, will remain on display until September 2.

The JSC photographic laboratory is able to provide a wealth of history thanks to what John Holland says is a "tremendous joint effort on the part of all civil service and contractor personnel."



## Roundup Swap-Shop

Swap Shop advertising is available to JSC and on-site contractor personnel. Articles or services must be offered as advertised, without regard to race, religion, sex or national origin. Ads should be 20 words or less, including home telephone number. Name and office code must accompany, but need not be included in ad copy. Typed or printed copy must be received (AP3 Attn: Roundup) by Thursday of the week before publication.

### BOATS

15' tri-hull, walk-thru Chrysler w/35 HP mtr, tilt trier, many extras incl top, entire rig 1 yr old, lk nw; \$2300, 488-3265.

'72 Glasspar boat, 16' bowrider, 85 HP Chrysler, big wheel trier, ski equipment, top xInt cond, \$2150; 334-1110.

19' Fiberglass deep V 101 HP IO, trailer, cutty cabin w/head, many extras, gd cond, 2-yr-old; Wilkes, 1-925-3654 or x3231.

### PETS

AKC reg collie, male, sable & white, 8 mos, ch bloodline, \$100; 488-6707.

AKC reg. poodle pups, chocolate, 1 ml & 2 fml, shots, 9 wks, \$100; Sharon, aft 9, 946-8259.

Taking deposits on AKC Champion wire hair fox terriers, born Aug. 1; 333-2616 or 333-3672.

Tippy, 9-mo-old part terrier female, spayed, nds less confinement & more attention than available, price — love & care; Verby, 946-3907.

### VEHICLES

'67 Plymouth Fury III, 4-dr, pwr steering & brakes, ac; aft 5, 488-4378.

'70 Dodge, 2-dr, hrdtop, 318-V8, auto trans, ac, xInt cond, \$1250; x4166 or 488-2624.

2 ea. Yamaha 100 Trailmasters, helmets, extra fenders, sprockets & luggage racks, must buy both, \$500; 471-4458.

'72 Cutlass Supreme, loaded, xInt cond, \$2,850; Wilton, aft 5, 332-5115.

'71 Chrysler New Yorker, 4-dr, all power, FM/AM, very clean, \$1795 or best offer; Jim Satterfield, x2872 or 474-3127.

'65 Chevrolet, 9-passenger wgn, air, orig owner, \$200; Glover, 334-2317.

'69 Catalina wgn, xInt cond, low mlge, power, air, extras, nw tires, \$1995 or best offer; Malone, x3931 or 422-2317.

'63 Chevy II Supersport, nw tires & battery, \$200; 488-0698.

'71 Ford Country sedan station wgn, air, pwr disk brakes, pwr steering, AM radio, rack, xInt cond, \$1650; 488-2329.

'74 Chevrolet Custom Fleetside pickup, V-8 engine, auto trans, pr steering & brakes, air, radio, 28,000 miles, \$3400; x4416 or 482-6683.

'71 Plymouth Roadrunner, interior & ext like nw, must see; 534-3243.

Honda 65 motorcycle, runs well, priced to sell, \$100; 481-3900.

'75 Cutlass Supreme, pwr steering & brks, AM/FM stereo, low mileage, red

w/white landau vinyl top, \$4850; aft 5, 559-1062.

Credit Union Repos: '74 Pinto Sta Wagon, auto trans, air, AM/FM; (73 Pontiac Catalina, air, AM/FM tape deck, turbohyd trans; '72 Chev Monte Carlo, auto trans, air; shown Wed. Sept. 3-5 by appoint only 10 a.m. to 2 p.m.; blds closed 5:30 Sept. 5. For appointment call Georgia Bennett, 488-7070.

### WANTED

Axle for small boat trailer; T. Ward, 488-5445.

### PROPERTY & RENTALS

For Sale: Lot Lk Rayburn in Forest Hills, all utilities, lake access, \$5,000; Colton, 488-2962.

4-2-2 Oakbrook/CLC, lg fncd lot on cul-de-sac, covrd patio, family rm w/ cathedral ceiling, nice landscpd, xInt cond, \$44,600; 488-5506.

3-2-2 house, formal living & dining rms, fncd bkdy, patio cover, \$32,000, or equity & assume 5-3/4 FHA, \$168/mo, League City; Gary Johnson, x3254 or 554-3937.

### HOUSEHOLD ARTICLES

Contemp 102" sofa, burnt orgn, Medtrn tables, lamps, Mexican cabnt, chrs; brass cabnt hdwr; walnut rocker, Fr Prov chest of drawers; 482-1005.

Sears 3/4 size roll-away bed, \$20; Vergy, 946-3907.

Refrigerator, coppertone, xInt cond, \$60; Drewes, x4386 or aft 4:30, 944-7632.

Antique 3-drawer, tiger oak dresser, orig brass hdwr, \$50; low 3-drawer oak chest, wd knobs, \$50; rnd mahogany lamp tbl, \$35; oak folding bkshef, \$45; 334-1869 aft 6.

Spanish dining tbl w/4 chrs, \$85; Billie, x6233, 333-3425.

### MISCELLANEOUS

Horse race fans ... will lease travel trailer on shady lot 3 blocks from Delta Downs, \$1000. For entire 75-76 season. Contact Barbara Matelski, 944-1280 aft 6 p.m.

Aux motor bracket for daysailer, small powerboat, etc, xInt, \$15; 488-3966.

Old Lionel train, best offer; 26" boys bike, 3-sp, \$10; Casco stroller, \$9; auto bottle warmer, \$2; GE heat & serve elec baby dish, \$6; Jamy car seat, \$7; Hoala

Coupe walker, \$4; various boys clothes, infant-3, xInt cond; 4X Bushnell Rifle scope, post reticle, \$20; Fairchild belt driven turntbl, Fchild cartridge, gray arm, \$40; Schulze, x3958 or 422-5636.

4' chain link fence, used, approx 60 ft w/posts & rails, \$40; Jay, x6357 or 481-2335.

Low voltage landscaping lighting system, unused, full warranty w/transformer, timer, 6 lights, \$80; 479-5152.

Trailer, 3 Bike Little Dude, new, 12" wheels, \$200; Cernan, 333-2383.

Elec Bug killer, really wks, still in box w/1-yr warranty still effect, retail \$130, will sell for \$75; 479-5152.

10-sp boys bike, 27" Schwinn, like nw, \$75; aft 5, 482-7858.

Two \$500 church bonds (Clear Lk Baptist) maturing April 1983 w/7.5% interest; Klots, x5384 or 488-1514.

Man's bike, 3-sp AMF w/basket, \$10; Norris, 334-1777.

Bowling ball, red, 13 lb, \$10; Black, 482-1635.

Ham Gear: 40' tower, TA-33 senior beam, AR-44 Rotator, buys, etc, \$195; Lindsey, x2901 or 488-0517.

Redwood patio set w/cushions, single recliner chr + dbl recliner w/connecting tbl, \$75; Sears 10" Accra-arm radial saw, nw tble, xtra blades, no stand, \$150; child's sandbox w/adj roof, \$15; 554-7052.

Detachable luggage rack, fits MG's, \$10; Schulze, x2901 or 422-5636.

Man's wrist watch, Retina IIIC, lens filters, gadget bag; Smith, x4776.

2 sets mattress & bunkett, xInt cond, \$25 ea; Gary Johnson, x3254 or 554-3937.

E Flat Alto Saxophone, Wurlitzer w/case, xInt cond, \$300 new, will sell for \$125; Jackson, x4031 or 946-6844.

Selmer Bundy clarinet, 2 yrs use, \$75; McAllister, 333-3590.

Bundy clarinet w/case, xInt cond; 474-3784.

Sony (Mod TC-366) reel-to-reel stereo tape rcd, hardly used, \$150; Steve, x6191 or 488-5829.

For rent: IFR equipped Bonanza, \$25 hr/wet, pilot must be IFR rated & guarantee 50 hr/yr minimum, aircraft based @ Spaceland; Lewis, 488-3265.

1-yr old 10-sp Murray Fleetwood racer, xInt cond w/chain, lock & cover, \$75; Lynn, 946-3907.

### LOST AND FOUND

Lost: silver dollar pc, part of keyring, probably in parking lot across Bldg. 2; Karla, x5309.

## Quoting... (Continued from page 3)

7/20/75 — 2:00 p.m. CDT

BRAND — Funny thing, Crip. Looking at thunderstorms down there, they don't look that much below us. We feel like we're really in a low orbit.

HOUSTON — ... Yeah ... I guess the appearance is that you are right with them.

BRAND — Yeah. You can see the 3-dimensional quality of them very well; very big mushrooms.

7/21/75 — 1:26 p.m. CDT

BRAND — Okay. Also, this just exercises certain muscles and I have the feeling I could probably jump tall buildings after this but possibly not walk — be — be able to walk.

HOUSTON — ... You going to put a big S on your chest?

BRAND — No. I better not.

7/22/75 — 8:09 a.m. CDT

STAFFORD — Bo, as a note of extreme interest, we have 5 more new fish this morning.

HOUSTON — Roger. 5 more new fish.

STAFFORD — Yep. We're going to be over-run with them here by Thursday. I hope they aren't sharks.

7/22/75 — 8:30 a.m. CDT

STAFFORD — Minus peas and plus teas ... — Didn't say one of the reasons we didn't eat the peas is because we couldn't catch up with them. They were pretty wild up here at zero G.

7/22/75 — 2:14 p.m. CDT

STAFFORD — Incidentally, I've lost my spoon three times, and found it shortly thereafter. And, anything floats away. You just can't afford to just leave anything unattended for more than five seconds. And quite often, things unstick themselves and float away.

HOUSTON — Got to be on your toes — try to keep everything tied down.

STAFFORD — Yeah, a couple of times I'll swear you could lose an elephant up here and not find it in this spacecraft — you know the way it's stowed around.

7/22/75 — 2:24 p.m. CDT

SLAYTON — We probably never mentioned to you that we ran out of our most important expendable ... — the old dry wipes ... —

BRAND — Actually — just ½ a box left, and that's really being rationed ... —

STAFFORD — Well — You're sure it's going to be ready to come home pretty soon — with just ½ a box of Kleenex left, and one change of underwear left, and plenty of food. But with the underwear and the Kleenex getting short, we'll be home shortly. We won't bring it home to have them washed — just leave them in the docking module ...

7/23/75 — 8:00 a.m. CDT

(DURING UNILATERAL PRESS CONFERENCE)

QUERY — ... would you be willing to take up a group of the press?

SLAYTON — Certainly, I'd be happy to. I think that'd be great to get all you folks up here. Cause there's no way we can sit up here to tell you about it or come back down there and tell you about it. And I think it'd be beautiful to bring you up here and show you.

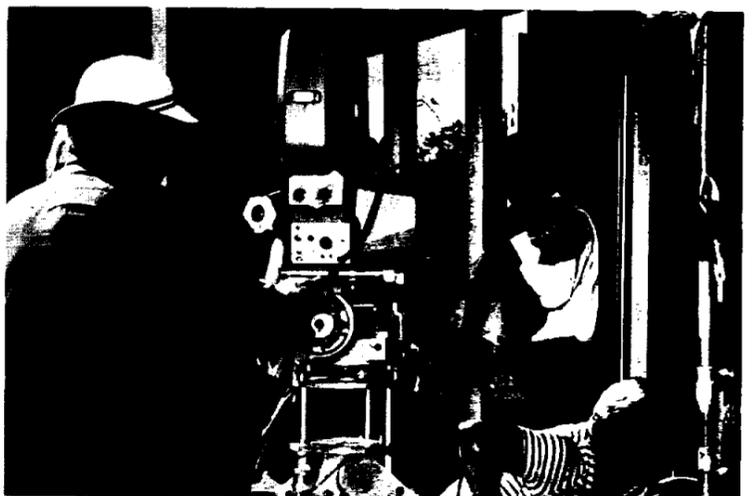
7/24/75 — 1:38 p.m. CDT

STAFFORD — Might tell the Skip of the New Orleans that if he'll be there, we'll be there.

HOUSTON — We'll set up the rendezvous.

7/24/75 — 2:15 p.m. CDT

TELEVISION COMMENTATOR (reading a message from Nelson Rockefeller) — ... The dramatic symbol of hands across the heavens between you and the cosmonauts captured the imaginations of us all ...



CAMERAS, LIGHTS, ACTION! Cliff Robertson, at the door of Bldg. 4, pauses for a moment during filming of the television movie, "Return to Earth."

## ROUNDUP

NASA LYNDON B. JOHNSON SPACE CENTER HOUSTON, TEXAS



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Editor: Martha McWilliams

Photographer: A. "Pat" Patnesky